

Lesson #6 (New)
 Calculating the Z-score.
 $Z = \frac{x_i - \mu}{\sigma}$ example: A normal distribution has a mean of 132 and a standard dev. of 5.
 $Z = \frac{139 - 132}{5} = \frac{7}{5} = 1.4$

Oct 5-1:31 PM

ex2] Let's compare SAT vs ACT
 SAT - MAX SCORE 1,600
 ACT - MAX SCORE 36
 Let's year in the ACT 25
 SAT 1100

**Google*
 $\mu = 21$ mean
 $\sigma = 4.8$ use 5
 $\mu = 1055$
 $\sigma = 195$

ACT: $Z = \frac{25 - 21}{4.8} = 0.83$
 SAT: $Z = \frac{1100 - 1055}{195} = 0.23$

Oct 5-2:18 PM

Project - 2017 Zscores
 Basketball = Le Bron = Avg. per Game
 vs. Football Tom Brady = Avg. per Game
 point per game vs. Touchdowns per game
 $\mu =$
 $\sigma =$

Oct 5-2:37 PM

Percentiles - A position in a set of data (ARRANGED) which is above the rest.
 ex] $\frac{7}{1}, \frac{10}{2}, \frac{13}{3}, \frac{15}{4}, \frac{21}{5}, \frac{30}{6}$
 $n = 6$
 Common Percentiles: P_{25}, P_{50}, P_{75}
 $Q_1, Q_2 = 14, Q_3$
 Formula to find ANY Percentile: $P_{50} = \frac{50}{100} \times (n+1)$
 $\frac{\text{Percentile}}{100} \times (n+1)$
 $0.50 \times (7) = 3.5$
 Position 3 = 13
 Position 4 = 15
 $\frac{13+15}{2} = \frac{28}{2} = 14$

Oct 5-2:43 PM

ex2] 116, 13, 14, 14, 15, 15, 16, 18, 18, 19
 $n = 15$

x	Frequency
1	2
6	1
13	2
14	3
15	2
16	1
18	3
19	1

 $Q_1 = \frac{25}{100} \times (15+1) = 4$ position
 $Q_2 = \frac{50}{100} \times (15+1) = 8$ position
 $Q_3 = \frac{75}{100} \times (15+1) = 12$ position
 $P_{40} = \frac{40}{100} \times (15+1) = 6.4$
 $\frac{6}{7} \left\{ \frac{13+14}{2} = 14 \right.$

outlier: a value very different than the rest.
 $\Sigma 15$ size
 Dot Graph
 IQR = $Q_3 - Q_1 = 18 - 13 = 5$
 IQR = Inter Quartile Range = $Q_3 - Q_1$
 Limit for outlier
 Left side $Q_1 - 1.5(IQR) = 13 - 1.5(5) = 5.5$
 Right side $Q_3 + 1.5(IQR) = 18 + 1.5(5) = 20.5$

Oct 5-2:53 PM